

DRUIN, V.A.; PERELYGIN, V.P.; KHLEBNIKOV, G.I.

Spontaneous fission periods for Np^{237} , Pu^{238} , and Pu^{242} .

Zhur. eksp. i teor. fiz. 40 no.5:1296-1298 My. '61.

(MIRA 14:7)

1. Ob"yedinennyy institut yadernykh issledovaniy.

(Nuclear fission)

(Neptunium—Isotopes)

(Plutonium—Isotopes)

PERFILOV, N.A.; SOLOV'YEVA, Z.I.; FILOV, R.A.; KHLEBNIKOV, G.I.

Spontaneous triple fission of curium-242. Dokl. AN SSSR 136
no. 3:581-582 Ja '61. (MIRA 14:2)

1. Radiyevyy institut imeni V.G. Khlopina AN SSSR. Predstavleno
akademikom E.P. Konstantinovym.
(Curium---Decay)

L 13613-6
ACCESSION NR: AF3003107

EWI(m)/BDS AFFTC/ASD

8/0056/63/044/006/1832/1836

54
53

AUTHOR: Perfilov, N. A.; Solov'yeva, Z. I.; Filov, R. A.; Khlebnikov, G. I.

TITLE: Ternary fission of plutonium 19

SOURCE: Zhurnal eksper. i teor. fiziki, v. 44, no. 6, 1963, 1832-1836

TOPIC TAGS: ternary fission of plutonium, Alpha particle energy spectra, plutonium thermal fission, uranium complex fission

ABSTRACT: The energy spectra of long-range Alpha particles produced in the spontaneous fission of Pu sup 238 and Pu sup 240 and in thermal fission of Pu sup 239 have been studied by the nuclear emulsion method with an aim at comparing both the fission probabilities and the fission Alpha-particle energy spectra of the different isotopes. Electrolytic films of Pu sup 238 and sup 240, containing 78 plus or minus 4 and 450 plus or minus 26 microgram respectively were used in the spontaneous fission test, and Pu sup 239 film irradiated with neutrons from the reactor of FTI AN SSSR was used to obtain the alpha-particle energy spectrum from thermal-neutron fission. The photographic plates were scanned with a microscope and the resultant histograms were tested for fits to Gaussian distributions with various maxima and half-widths. The spectrum shapes are discussed and compared
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L 13611-63

ACCESSION NR: AP3003107

with the results for complex uranium fission. Logical reasons for representing the Alpha-particle spectra as Gaussian or near-Gaussian distributions are advanced and agreement in the case of ternary fission of Pu sup 240 is noted with recent work by R. A. Nobles (Phys. Rev. v. 126, 1508 (1962)). "In conclusion, the authors wish to thank V. M. Kulekov for experimental assistance." Orig. art. has: 2 figures, 1 formula, and 2 tables.

ASSOCIATION: none

SUBMITTED: 17Jan63

DATE ACQ: 23Jul63

ENCL: 003

SUB CODE: 00

NO REF SOV: 008

OTHER: 007

Card 2/52

GELIKMAN, B. T.; KHLEBNIKOV, G. I.

"Quasiclassical model of ternary fission."

report submitted for Intl Conf on Low & Medium Energies Nuclear Physics,
Paris, 2-8 Jul 64.

Kurchatov Inst, Moscow.

GEYLIKMAN, B.T.; KHLEBNIKOV, G.I.

A quasi-classical model of triple fission. Atom. energ. 18 no.3:
218-223 Mr '65. (MIRA 18:3)

KHIL' BAKOV, G.K.

VEDENKIN, S.G., professor; ~~KHIL'BAKOV, G.K.~~, kandidat tekhnicheskikh nauk;
CHURILIN, N.S., kandidat tekhnicheskikh nauk.

Using sulfurous diesel fuels in TE2 diesel locomotives. Vest.TSNII
MPS no.1:13-18 F '57. (MLRA 10:3)
(Locomotives--Fuel consumption)

KHLRBNIKOV, G.K., kandidat tekhnicheskikh nauk.

Diesel locomotives can operate on sulfurous fuel. Elek. i topl.
tiaga no.3:9-11 Mr '57. (MIRA 10:6)
(Diesel locomotives)

KHLEBNIKOV, G.K., kand. tekhn. nauk

Technical and economic efficiency of using natural gas in diesel locomotives. Zhel. dor. transp. 41 no.1:49-54 Ja '59.

(MIRA 12:1)

(Gas, Natural) (Diesel locomotives)

KHLEBNIKOV, Gennadiy Nikolayevich; BELOV, M.P., red.; KAYDALOVA, M.D.,
tekhm. red.

[Nikolai Shcheglov, crew leader among construction workers] Bri-
gadir stroitelei Nikolai Shcheglov. Khabarovsk, Khabarovskoe
knishnoe izd-vo, 1958. 28 p. (MIRA 14:9)
(Construction workers)

L 08268-67 FSS-2/EWT(1)/ESC(k)-2 SCTB TT/DD/GD/GW

ACC NR: AT6036481

SOURCE CODE: UR/0000/66/000/000/0036/0637

AUTHOR: Arzhanov, I. M.; Bryanov, I. I.; Baturenko, V. A.; Beresgovkin, A. V.;
Buyanov, P. V.; Kovalev, V. V.; Kondrakov, V. M.; Krasovskiy, A. S.; Kuznetsov, O. N.;
Kuznetsov, S. V.; Nikitin, A. V.; Nistratov, V. V.; Teret'yev, V. G.; Fedorov, Ye. A.;
Khlebnikov, G. V.

ORG: none

TITLE: Some results of the postflight examination of P. I. Belyayev and A. A. Leonov
following their flight on the Voskhod-2 spacecraft [Paper presented at the Conference
on Problems of Space Medicine held in Moscow from 24 to 27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy
kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii,
Moscow, 1966, 36-37

TOPIC TAGS: space medicine, postflight medical examination, bodily fatigue, body
weight, cardiovascular system, oculocardiac reflex, unconditioned reflex, space
psychology, oxygen consumption, respiration, pulmonary ventilation/Voskhod-2

ABSTRACT: Postflight examinations of the Voskhod-2 crew members, Leonov
and Belyayev, were performed on the third and fourth days after the flight
and again a month later. The cosmonauts complained of light fatigue.
They were found to have hyperemia of the mucosa of the nose and throat
and conjunctivitis of the eyelids and eyeballs. They had lost weight

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ACC NR: AT6036481

Their pulse showed a certain lability. Pulse frequency rose significantly during mild physical exertions and changes in the position of the body. There was an increase in intraventricular conductivity, an increase in the systolic index (7—11%), and a delay in restoration of hemodynamic indices after physical exercise.

Belyayev's oxygen consumption increased by 23% and Leonov's by 14% as compared with preflight levels. Vital capacity of the lungs diminished by 8—12%, while pulmonary ventilation increased by 51—18%.

Neurological examinations revealed a light tremor of the fingers, a high orthostatic reflex with an absence of pulse reaction to the oculo-cardiac reflex, and an increase in the slow bioelectrical activity of the brain cortex. Psychological tests revealed an increase in distribution and in the middle magnitudes of the duration of the period of sensory motor reaction. Since this was not accompanied by errors, it is possible to assume that the fatigue observed in cosmonauts was a compensatory reaction. Blood and urine examination on the third day after flight did not differ substantially from preflight levels. Biochemical examination uncovered an increase of chlorides, adrenalin, noradrenalin, and 17-oxy corticosteroids in the urine.

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ACC NR: AT6036481

The observed shifts in physiological indices were short-term and reversible. They indicated the development of moderately marked fatigue in the subjects. Thus, despite the complexity of the flight, the postflight examinations revealed only moderate functional changes in the two cosmonauts. There was no difference in the nature of these changes in the cosmonauts. This indicates a high degree of training and a good neuropsychological and physical preparation for spaceflight.

[W.A. No. 22; ATD Report 66-116]

SUB CODE: 06, 22 / SUBM DATE: 00May66

Card 3/3

29k

KHILEBNIKOV, I.

Glavnyi Turkmenskii kanal. [The Main Turkmen Canal]. (Trud, 1950, Sept. 19).

SO: Soviet Transportation and Communication. A Bibliography, Library of Congress, Reference Department, Washington, 1952, Unclassified.

GUKIN, V.; KUZNETSOVA, M., starshiy nauchnyy sotrudnik; KHLEBNIKOV, I.,
mladshiy nauchnyy sotrudnik; AKHAPKIN, A., tekhnolog

Mechanized swine-fattening farm. Sel', stroi. no.7:12-13 '62.
(MIRA 15:8)

1. Glavnyy zootekhnik sovkhoza "Moshkovskiy" Novosibirskoy oblasti
(for Gukin). 2. Zapadno-Sibirskiy filial Akademii stroitel'stva i
arkhitektury SSSR (for Kuznetsova).

(Swine houses and equipment)

KHLEBNIKOV, I.A.

Survey of river and lake bottoms by means of a vertical angular
intersection of water surface points. Sbor.st.po geod. no.3:77-83
'53. (Hydrographic surveying) (MLRA 9:6)

~~KHLEBNIKOV~~, I.A., dotsent, kand.tekhn.nauk; MIZYUMSKIY, V.A., dotsent, kand.
tekhn.nauk

Determining the coefficient of suction and capacity of wellpoints
by the mixing method. Trudy LIL'HT no.165:179-183 '59.

(MIRA 13:6)

(Drainage---Equipment and supply)

ACC NR: AT6022251

SOURCE CODE: UR/0000/66/000/000/0010/0019

AUTHOR: Khlebnikov, I. N.

ORG: none

TITLE: Approximate method for analysis and calculation of principal characteristics of the amplatron

SOURCE: Vsesoyuznaya nauchnaya sessiya, posvyashchennaya Dnyu radio. 22d, 1966. Sektsiya elektroniki. Doklady. Moscow, 1966, 10-19

TOPIC TAGS: amplatron, platinotron, SHF amplifier

ABSTRACT: Distinct from the well-known G. Dombrowskiy method (Trans. IRE, 1959, ED-6, no. 4, 419), a new method is suggested which uses the averaging of SHF potential along the interaction space in the amplatron; this technique permits reducing the amplatron problem to a problem of an induced current in an equivalent magnetron. The space charge is represented as phase-focused converging electron spokes; thanks to the radial SHF-field component, the electrons are focused as they fly toward the anode, which makes the charge density, in the spoke, under dynamic conditions practically constant. A formula for the induced current is developed which is applicable to narrow spokes having any base shape. By using the above space-charge representation and the induced-current relation, formulas are deduced for the amplatron gain, output power, and efficiency; they permit calculating principal characteristics and parameters of the amplatron under normal conditions of its operation. Orig. art. has: 3 figures and 26 formulas.

SUB CODE: 09 / SUBM DATE: 09Apr66 / ORIG REF: 004 / OTH REF: 001

Card 1/1

SOV/137-58-11-22063

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 11, p 33 (USSR)

AUTHOR: Khlebnikov, I. Ya.

TITLE: Certain Special Features of the Design of Blast Furnace Nr 5 of the Chelyabinsk Metallurgical Plant (O nekotorykh osobennostyakh konstruktsiy domennoy pechi Nr 5 Chelyabinskogo metallurgicheskogo zavoda)

PERIODICAL: Tekhn.-ekon. byul. Sov. nar. kh-va Chelyab. ekon. adm. r-na, 1958, Nr 2, pp 15-18

ABSTRACT: The cooling system of blast furnace Nr 5 is evaporative. Water consumption for cooling is reduced by an average of 98.75%. Consequently it is possible to use softened water free of matter in suspension and scale-formers. The blast-furnace coolers, and the stove hot-blast and cut-off valves are being re-equipped for evaporative cooling. The overall economic effect of the utilization of evaporative cooling will be about 1.5 to 2.0 million rubles per year.
M. M.

Card 1/1

KHLEBNIKOV, K. A.

PIGICH, G.S., tech.; KUSI, G.V., tech.; DOLENTSOV, L.A., tech.

New technology for injecting channels in prestressed beams
under low-temperature conditions. Avt. Gaz. 22 no. 5:8 My '59.
(NIMA 12:8)

(Bridges, Concrete)

VILLEVAL'LE, N.D.; LYSANOV, Yu.V.; SKOTNIKOVA, V.V.; KHLEBNIKOV, K.K.; YUDIN, M.F.

The 50 Mev. betatron at the All-Union Scientific Research Institute of
Meteorology. Prib. i tekhn. eksp. 10 no.1:38-43 Ja-F '65. (MIRA 18:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii.

KREMLYANSKIY, Aleksandr Nikolayevich; KHLERNIKOV, I. I., redaktor; SEMENNOVA,
M.M., redaktor izdatel'stva; TIKHONOVA, Ye.A., tekhnicheskii redaktor

[Manual for the ship's handler] Pamiatnaia knizhka sudovoditelia.
Moskva, Izd-vo "Morskoi transport," 1956. 229 p. (MIRA 10:2)
(Seamanship)

SHEKHOVTSOV, Aleksey Lavrent'yevich; KHLEBNIKOV, L.L., red.; SEMENOVA, M.M.,
red. izd-va; TIKHONOVA, Ye.A., tekhn. red.

[Handbook for ship handlers] Spravochnik sudovoditelia. Moskva,
Izd-vo "Morskoi transport," 1958. 350 p. (MIRA 11:8)
(Ships)

KHLEBNIKOV, M.

Automotive transportation agencies take over loading operations. Avt.
transp. 39 no.4:11 Ap '61. (MIRA 14:5)
(Transportation, Automotive—Freight) (Loading and unloading)

ALEKHIN, S.V., doktor tekhn. nauk, prof.; GROKHOL'SKIY, N.F.,
 kand. tekhn. nauk, dots.; ZOLOTNIKOV, I.M., kand. tekhn.
 nauk, dots.; KOCHUGOV, P.I., kand. tekhn. nauk, dots.;
 MALYSHEV, G.N., kand. tekhn. nauk, prof.; KHLEENIKOV, M.S.,
 kand. tekhn. nauk, retsenzent; PISAREV, N.G., kand. tekhn.
 nauk, dots., retsenzent; ODING, G.A., kand. tekhn. nauk,
 dots., retsenzent; KURENKOV, I.I., kand. tekhn. nauk,
 retsenzent; PROKOF'YEVA, Ye.I., inzh., retsenzent; YAKOVLEV,
 D.A., inzh., retsenzent; SERGEYEVA, I.N., red.

[Design of technological processes for the manufacture of
 billets and parts for the rolling stock of railroads;
 methodological manual on the technological aspects of di-
 ploma projects prepared in institutions of higher learning
 of railroad transportation] Proektirovanie tekhnologicheskikh
 protsessov proizvodstva zagotovok i detalei podvizhnogo so-
 stava zheleznykh dorog; uchebno-metodicheskoe posobie po tekhn-
 nologicheskoi chasti diplomnogo proektirovaniia v vuzakh zhe-
 leznodorozhnogo transporta. Moskva, Vses. zaochnyi in-t in-
 zhenerov zhel-dor. transporta. Pt.1. 1964. 202 p.

(MIRA 18:3)

KHLEBNIKOV, N., Geroy Sovetskogo Soyuza, general-polkovnik artillerii
v otstavke, byvshiy nachal'nik artillerii 25-y Chapayevskoy
divizii.

The people's hero. Voenn. zhurn. 38 no.2:1. P. 42.
(MIRA 15:2)
(Chapaev, Vasilii Ivanovich, 1887-1919)

KHLEBNIKOV, N., general-polkovnik artillerii v otstavke, Geroy Sovetskogo
Soyuza

Legendary commander of a Soviet division; on the 75th anniversary of
V.I.Chapaev's birth. Komm.Vooruzh.Sil 2 no.2:92-93 Ja '62.
(MIRA 15:3)

1. Byvshiy nachal'nik artillerii 25-y Chapayevskoy divizii.
(Chapaev, Vasilii Ivanovich, 1881-1919)

KHLEBNIKOV, N.G., master

Prevention of the random switching of air switches. Energetik 12
no.1:28-30 Ja '64. (MIRA 17:3)

KHLEBNIKOV, N.Y. (g. Moskva)

Conducting classes in electromagnetism. Fiz. v shkole 14 no.5:

28-38 S-0 '54.

(MLRA 7:9)

(Electromagnetism--Study and teaching)

KHLEBNIKOV, NIKOLAY I.

ZHDANOV, Leonid Sergeyevich; ~~KHLEBNIKOV, Nikolay Ivanovich~~; SUVOROV, N.P.
redaktor; RYDNIK, V.I., redaktor; TUMARKINA, N.A., tekhnicheskii
redaktor

[A course in physics for technical schools] Kurs fiziki dlia
tekhnikumov. Pod red. N.P. Suvorova. Moskva, Gos. izd-vo
tekhniko-teoret. lit-ry. Pt.1. [Mechanics and molecular physics]
Mekhanika i molekuliarnaia fizika. 1956. 391 p. (MLRA 10:5)
(Mechanics) (Molecular dynamics)

KHLEBNIKOV, N. Kelay + Ivanovich

ZHDANOV, Leonid Sergeyevich; KHLEBNIKOV, Nikolay Ivanovich; SUVOROV, N.P.,
red.; RYDNIK, V.I., red.; AKHLAMOV, S.M., tekhn.red..

[A course in physics for engineering schools] Kurs fiziki dlia
tekhnikumov. Moskva, Gos.izd-vo tekhniko-teoret. lit-ry, 1957.
Pt.2. [Electricity, optics, physics of the atom and the atomic
nucleus] Elektrichestvo, optika, fizika atoma i atomnogo iadra.
Pod red. N.P.Suvorova. 488 p. (MIRA 11:2)
(Physics)

ZHDANOV, Leonid Sergeyevich; KHLEBNIKOV, Nikolay Ivanovich; SUVOROV, N.P.,
red.; KUZNETSOVA, Ye.B., red.; PLAKSHE, L.Yu., tekhn. red.

[Course in physics for technical schools] Kurs fiziki dlia tekhniki-
kumov. Pod red. N.P.Suvorova. Izd.2. Pt. [Mechanics and molecular
physics] Mekhanika i molekuliarnaia fizika. 1961. 391 p.
(MIRA 14:6)

(Physics)

VARSHURIN, A.A., inzh.; KHLBNIKOV, N.I., inzh.; SIBAROV, Yu.G., inzh.; FOMICHEV, V.A., inzh.; MELAMED, M.F., inzh.; POTAPOVA, T.I., inzh.; KOLYUZHNYI, G.G., inzh.; TAGIROVA, M.I., inzh.; SHIFMAN, O.I., inzh.; STORTS, A.A., inzh.; VASHURIN, A.A., inzh., otv. za vypusk; KHITROV, P.A., tekhn. red.

[Safety engineering regulations for operating traction substations and sectionalization posts of electrified railroads]Pravila tekhniki besopasnosti pri ekspluatatsii tiagovykh podstantsii i postov sektionirovaniia elektrifitsirovannykh zheleznykh dorog. Moskva, Transzheldorizdat, 1962. 202 p.

(MIRA 15:8)

1. Russia (1923- U.S.S.R.)Glavnoye upravleniye elektrifikatsii i energeticheskogo khozyaystva. 2. TsE Ministerstva putey soobshcheniya (for Khlbnikov). 3. TSentral'nyy komitet profsoyuza (for Fomichev). 4. Moskovskaya zheleznaya doroga (for Kolyuzhnyy). 5. Sverdlovskaya zheleznaya doroga (for Tagirova). 6. Yuzhno-Ural'skaya zheleznaya doroga (for Shifman). 7. Zapadno-Sibirskaya zheleznaya doroga (for Storts).

(Electric railroads--Safety regulations)

117 AND 120 CROOKS

PROCESSES AND PROPERTIES N11

Determination of digestibility of proteins in the mixed excreta of fowls. N. I. Khlebnikov, A. S. Solun and A. K. Danilova. *Trans. Poultry Research Inst. Moscow* 1, No. 4, 20-8(1934). The mixed excreta are boiled with aq. alc. for 2.5-3 min. and filtered. The urea, creatine and creatinine pass into the filtrate as oxalates, leaving (NH₄), C₂O₄, uric acid and indigestible protein as an insol. residue. B. C. A.

ASD-SLA DETAILING LITERATURE CLASSIFICATION

117 AND 120 CROOKS

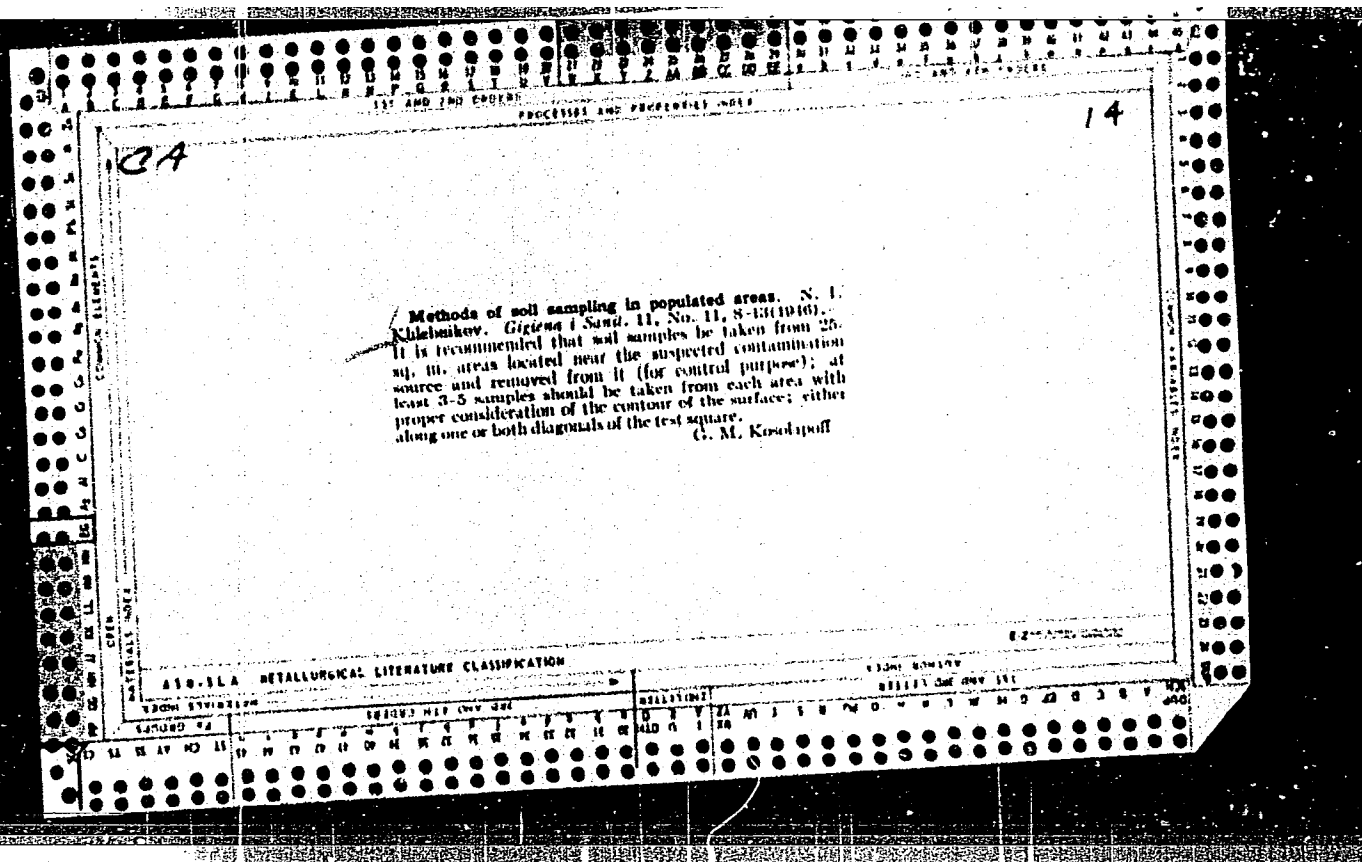
1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p><i>CR</i></p> <p>The action of the products of hydrolysis of protein in the autoclave on the growth of pullets. A. P. Arsen'ev and N. I. Khichnikov. <i>Problemy Kuzakrinoi</i>, 2, No. 4, 49-68 (1977); <i>Chem. Zentr.</i> 1978, 1, 124. --Ground meat, hydrolyzed in the autoclave, showed no pos. effect on the growth of young pullets and could not be used as a substitute for other sources of protein. In the production of meat powders for feed, therefore, the use of high temps. must be avoided. M. G. Moore</p> <p><i>115</i></p>																			
<p>ASM-ILA METALLURGICAL LITERATURE CLASSIFICATION</p>																			

CA

15

The nitrogen fractions of soil nitrates as indexes of mineralization of organic substances containing nitrogen. N. A. Khebonov. *Gigiena i Sanit.* 11, No. 6, 1-6 (1966). - Samples of soils were hydrolyzed before and after contamination with excreta. In the excreta monominoamino acids predominate over all the other N fractions (50-80%); NH_4 , amides, and diamino acids are present in nearly equal amounts (11.21, 9.57, and 9.33%). Comparison of analyses of N fractions in control soils and in contaminated samples showed that in the latter the monomino acids were doubled as a rule, while NH_4 increased even more (3 to 22 times the original amt.). The amides increased 1.3 to 5 times the nonhydrolyzable residue showed a parallel gain (1.5 to 4 times the control value). The diamino acids remained practically unchanged. The distribution of N changed with time in both untreated and contaminated soils. After 5 months noncontaminated soils were found more stable with regard to N distribution. Their total N and NH_4 remained unchanged or only slightly decreased; monomino acids either fell or rose slightly, while diamino acids and the residue decreased. Only amides showed a moderate rise. The losses indicate active mineralization and migration of the nitrates into the lower horizons. In the treated soils total N and NH_4 decreased in the same period to $1/4$ and $1/6$ the original amt. Amides fell abruptly to $1/6$, while diamino acids were unchanged. The residue showed small to moderate gains or losses. Water extracts of treated soils of sandy and clay textures were analyzed for NH_4 , amides, and amino acids. The residue was detected in each case. The data showed that mineralization was still in progress. Traces of NH_4 were found in the extracts of both types of soils. A check detn. on untreated soils showed a high NH_4 content by distn. with MgO under reduced pressure). Other N fractions were also present in fair amounts; this indicates that mineralization in most samples was ended and in a few very nearly completed. Soil nitrates thus gives an idea of the extent and progress of mineralization, and the relative amounts of different fractions serving as indexes. Soil water extracts are useless as indicators of the condition of contamination of soils, as their analysis does not represent the true distribution of N in the soil itself.

C. S. Shapiro



KHLEBNIKOV, N. I. Dr. Biolog. Sci.

Dissertation: "Sanitary Investigation of the Soil of Populated Localities (Physical and Chemical Analysis)." Acad Med Sci USSR, 26 May 47.

SO: Vechernyaya Moskva, May, 1947 (Project #17836)

PHILENTIEV, N. I.

Medicine

Sanitary analysis of soil of populated places; physical, chemical, bacteriological and helmintho- logical methods
Moskva, Izd-vo Akademii med. nauk. SSSR, 1951.

9. Monthly List of Russian Accessions, Library of Congress, August, 1952 195³, Uncl.

24

15

the relation of soil protein and organic nitrogen as a
sanitary index of soils at populated points. N. I. Khleb-
nikov, *Gigiena i Sanit.* 1951, No. 4, 14-19. — The ratio of
soil protein N to the org. N, called the "sanitary no.," is an
index of the extent of contamination of the soil. The ratios
below 0.7 indicate heavy contamination, 0.7-0.83 moder-
ate contamination, 0.85-0.98 slight contamination, over
0.98 almost no contamination. Considerable exptl. ma-
terial is presented to support the principle.

G. M. Kosolapoff

1951

USSR / Microbiology. Hygienic Microbiolog-

F-4

Abs Jour : Ref Zhur - Biol., No. 20, 1958, No. 90881

Author : Khlebnikov, N. I.; Kozhinova, L. A.; Lebedeva, M. V.;
Kichenko, G. G.

Inst : Not given

Title : The Problem of Using Sewage Water for Fertilizer on
Farm Land

Orig Pub : Gigiyena i sanitariya, 1957, No. 31-35 (res. Eng.)

Abstract : A study was made of the influence of non-vegetative and
vegetative irrigation of podzolic sandy and loam soils
by sewage waters (clarified and sedimented) on the sanitary
condition of the soil and the vegetables cultivated in it.
The sanitary state of the soil and vegetables was determined
by a coli index and by the number of eggs of the helminths,
and a sanitary count was also done on the soil. In the
vegetative period accompanied by the use of clarified

Card 1/2

Inst. Gen. & Communal Hygiene AMS USSR

Card 2/2

AL'F, S.L.; MISHUSTIN, Ye.N.; PERTSOVSKAYA, M.I.; KHLBNIKOV, N.I.;
SYSIN, A.N., prof., red.; URAZAYEV, N.M., red.; BUL'DYAYEV,
N.A., tekhn.red.

[Indications of the sanitary condition of the soil of populated
places] Pokazateli sanitarnogo sostoyaniya pochvy naselennykh
mest. Pod red. A.N. Sysina. Moskva, Gos.izd-vo med.lit-ry, 1959.
149 s. (MIRA 13:5)

1. Deystvitel'nyy chlen AN SSSR (for Sysin).
(SOILS—BACTERIOLOGY)

KULEBNIKOV, N. I., MATVEYEV, P. N., KOZHINOVA, L. A., SUKHOVA, M. N.,
PERTSOVSKAYA, M. I., MASTIKOVA, M. I., LEBEDEVA, M. V., KICHENKO, N. G.,
VASIL'KOVA, Z. G., GUDZHABIDZE, G. SH., KILESEK, V. A., GUREVA, YU. I.,
KIZEVAL'TER, I. S.

"Hygienic evaluation of the experience of rendering harmless the
drainage waters on agricultural lands."

report submitted at the 13th All-Union Congress of Hygienists, Epidemiologists
and Infectionists, 1959.

KHLEBNIKOV, N.I., prof.; MATVEYEV, P.N., kand.meditsinskikh nauk; PERTSOVSKAYA,
N.I., kand.biologicheskikh nauk

"Soil mineralization of town refuse and its use in agriculture" by
P.A. Babaants. Revised by N.I.Khlebnikov, P.N.Matveev, M.I. Pert-
sovskaya. Sig. 1 san. 25 no.4:116-117 Ap '60. (MIRA 13:8)
(REFUSE AND REFUSE DISPOSAL) (BABAIANTS, P.A.)

LITVINOV, N.N., prof., red.; RYABOV, V.N., kand. med. nauk, red.;
KHLEBNIKOV, N.I., prof., red.; KHAMIDULLIN, R.S., red.;
CHULKOV, I.F., tekhn.red.

[Hygiene of irrigated agricultural fields; experimental
hygienic research]Gigiena zemledel'cheskikh polei orosheniia;
eksperimental'nye gigienicheskie issledovaniia. Moskva, Med-
giz, 1962. 299 p. (MIRA 16:1)

(SEWAGE—BACTERIOLOGY) ((SEWAGE IRRIGATION)
(PUBLIC HEALTH RESEARCH)

KHLEBNIKOV, N.I.

Problem of the concept "healthy soil." Vest. AMN SSSR 18 no.2:
3-12 '63. (MIRA 17:5)

1. Iz Instituta obshchey i kommunal'noy gigiyeny imeni A.N.
Syaina AMN SSSR.

KHLEBNIKOV, N. N.

"Modern Pulse Electron Tubes," Sbornik Trudov L&IS imeni Bonch-Bruyevich, No
6, 1949.

KHLEBNIKOV, N. N.

"Summary of Lectures for an Electronic Instrument Course", Transzheldorizdat,
388 pp, 1950.

KHLEBNIKOV, N.N., kandidat tekhnicheskikh nauk.

Processes in circuits of negative charge grid receiver-amplifier
tubes. Sbor.trud.LONITOV no.1:93-104 '54. (MLRA 10:5)
(Electron tube circuits)

KHLEBNIKOV, Nikolay Nikolayevich: VIZIT', A. I., otv. red.
KHLEBNIKOV, I. I., red.

[Electronic devices] Elektronnye pribory. Moskva, Sviaz',
1964. 615 p. (MIR 17:9)

ACC NR: AM6021847

Monograph

UR/

Khlebnikov, Nikolay Nikolayevich

Electron devices (Elektronnyye pribory) Moscow, Izd-vo :Svyaz'", 1966, 615 p. illus., biblio. Textbook for students at electrotechnical institutes of communications. 25,000 copies printed.

TOPIC TAGS: electron tube, semiconductor theory, ^{SEMICONDUCTOR} diode, transistor, cold cathode tube

PURPOSE AND COVERAGE: The book was written for use in courses on electronic devices at electrotechnical communications institutes. The operational principles, characteristics, parameters, structures, and schematics of electron devices in communications engineering are covered. Current electronic equipment is stressed. Part Two on semiconductor devices has been considerably expanded.

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UDC: 621.389(075.8)

ACC NR: AM6021847

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ACC NR: AM021847

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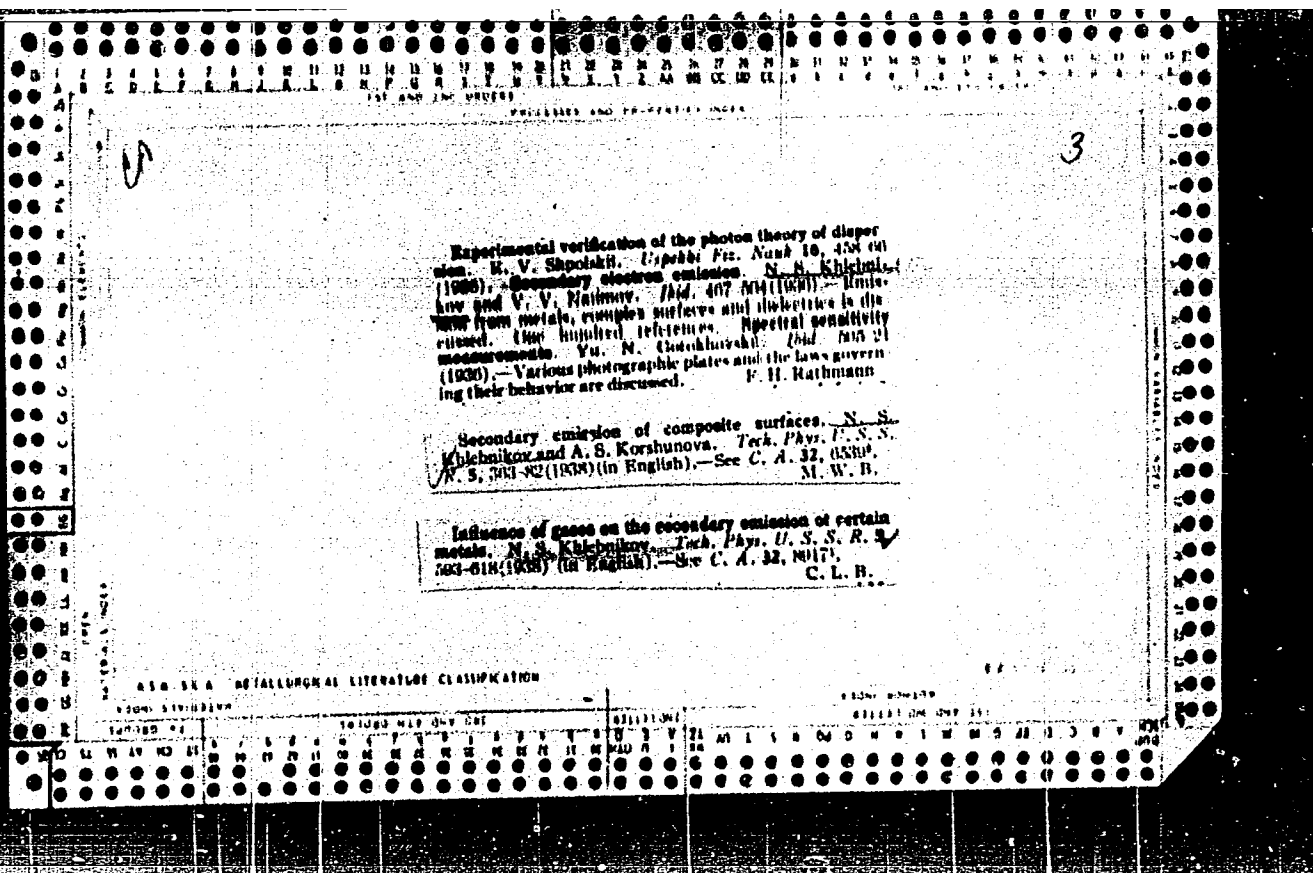
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SUB CODE: 09/ SUBM DATE: 30Dec65/ ORIG REF: 037/ OTH REF: 001/

Card 6/6



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Secondary emission of composite surfaces. N. S. Khlebnikov and A. S. Korshimova. *J. Tech. Phys.* (U. S. S. R.) 6, 500-15 (1934).—The shape of curves $\sigma = f(V)$ is detd., σ being the ratio of the intensities of the primary and the secondary electronic currents, and V the energy of the primary electrons in e. v. For Ca sublimed onto Ag σ is approx. 0.9; small amts. of O_2 affect it in an uncertain way, larger amts. (not measured) produce a curve with a max. (δ to η) at $V = 300-500$, while a surplus of O_2 reduces σ again to approx. one. If at this stage more Ca is added σ rises again. The presence of comparable amts. of Ca and CaO in the coating seems, therefore, necessary for high σ . The final values of σ are reached within 1 hr. after O_2 addn. If on a partly oxidized Ca coating with a high σ some Ag is deposited, the max. of σ is increased and shifted to $V = 900$. The σ of an ordinary Ag- CaO , Ca-Ca photocell is reduced to 1 by smallest addns. of O_2 . The value of σ is independent of the photosensitivity of the cell. The mechanism of the secondary emission is discussed. J. I. Birkman

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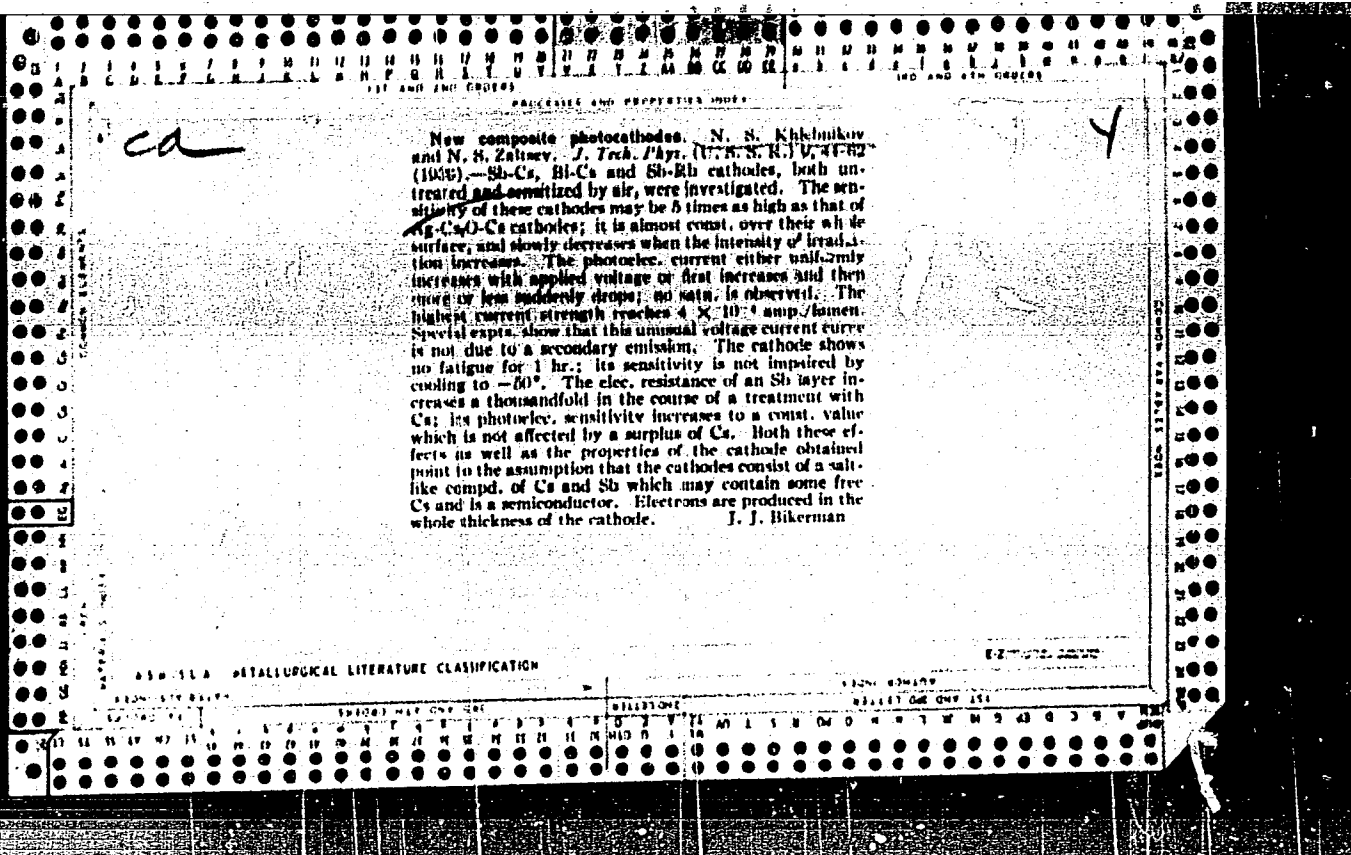
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1ST AND 2ND INDEX										3RD AND 4TH INDEX									
PROCEDURES AND PROPERTIES INDEX																			
<p><i>Co</i></p> <p>Properties of Coatings on the Secondary Emission of Certain Metals (Borshchov, Borshchov, G. P. (USSR), N. S. (USSR) (USSR, Techn. Phys. J. Tech. Phys. 19, 8, 1023-33 (1983)). In Russian. The effects of the gases oxygen, hydrogen, and helium on the secondary emission characteristics of beryllium, magnesium, and tantalum were studied.—R. G.</p> <p>Certain problems of the technology of oxygen-silver-coated phototubes. N. S. Zaitsev and N. S. Khlebnikov. J. Tech. Phys. (U. S. S. R.) 8, 1023-33 (1983). <i>MA 7A 575A</i> John Livak</p>																			
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<p> <i>2</i> </p> <p> <i>4</i> </p> <p> Certain properties of effective emitters. N. S. Khlebnikov. <i>J. Tech. Phys.</i> (U. S. S. R.) 9, 307-70 (1939); cf. preceding abstract; C. A. 32, 10171. The coeff. α of the secondary emission of Sb-Cs cathodes deposited on Ag has a max. ($\alpha = 0$) at 100°. Presumably the semiconductor Cs-Sb has at this temp. the most favorable concn. of electrons. J. J. Bikertman </p>																																																			
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4677. Secondary Emission from Thin Dielectric Layers. A. Korshunov and N. A. Zolotarev. *J. Techn. Phys. U.S.S.R.* 6, 10, pp. 860-696, 1969. (In Russian.) Experiments are described which show that thin layers of $MgCl$ (optimum thickness 2×10^{-4} cm.) give large secondary emission, confirming the result of Brünling and de Boer [see Abstract 3321 (1937)]. From their experiments the authors conclude that the influence of external factors (the conditions of electron bombardment and temperature) is due to changes they produce in the structure of the layer. [See preceding Abstract.] D. S.

U.S.

CA

3

Methods of obtaining foot particles. N. S. Klichukov.
Ispokhi. Pis. Nauk 22, 427-41 (1959). Review in the
English and American literature and a description of the
Leningrad cyclotron. P. H. Rathmann

ASB SLA METALLURGICAL LITERATURE CLASSIFICATION

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CA

The volt-ampere and light characteristics of antimony-cadmium photocells. N. S. Khokhlov. *J. Tech. Phys.* (U. S. S. R.) 10, 1938-12(1440).—The study of volt-ampere characteristics of Sb-Cd photocells on a metallic base shows the presence of saturation phenomena up to light intensities of 50,000 luxes. The saturation occurs later, when higher light intensities are used. The light characteristics of such photocells are linear for light intensities of the order of 100 lumens, provided the fatigue of cathode is eliminated, and the anode potential is sufficiently high.

Roksalana Gamow

1ST AND 2ND CODES		PROCESS AND PROPERTIES INDEX		3RD AND 4TH CODES	
C A				3	
<p>The fatigue of antimony-cesium photocathodes. N. S. Khebnikov and P. A. Smitsyn. <i>J. Tech. Phys.</i> (U.S.S.R.) 10, 1913-18(1940).—Sb-Cs cathodes under typical working conditions (e. g., in sound motion pictures) have along with very high sensitivity, very small degree of fatigue. A number of diagrams show the change of spectral characteristics of these cathodes resulting from the fatigue. It is proposed to describe the fatigue phenomena, not by two parameters ("period of relative stabilization" and "the degree of relative stabilization"), as was done in most of the previous investigations, but by one parameter defined as the ratio of the sensitivity decrease to the initial relative stabilization. New oxygen-silver-cs photocathodes. <i>Ibid.</i> 1919, 23(1940).—The article describes the method of construction, and the properties of the new type of O-Ag-Cs cathodes in which the silver layer was formed on the top of the ordinary cesium deposited layer by an evapn. process. Such cathodes differ from ordinary O-Ag-Cs cathodes by (1) their spectral characteristic, showing long-wave max. at shorter wave lengths, (2) higher sensitivity in the region 6000-4600 Å., and (3) very low fatigue in spite of high integral sensitivity.</p> <p style="text-align: right;">Roksalana Gamow</p>					
410-51A METALLURGICAL LITERATURE CLASSIFICATION					
REGION 1 SYMBOL		REGION 2 SYMBOL		REGION 3 SYMBOL	
SUBJECT NO.		SUBJECT NO.		SUBJECT NO.	

KHLEBNIKOV, N. S.

KHLEBNIKOV, N.S., and P.A. SINITSYN

Novye kislородno-serebriano-tsezievye fotokatody. (Zhurnal tekhnicheskoi fiziki, 1940, v. 10, no. 22, p. 1919-1923, diagrs.)
Title tr.: New Oxygen-silver-caesium photo-cathodes.

CO1. Z48 1940

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955

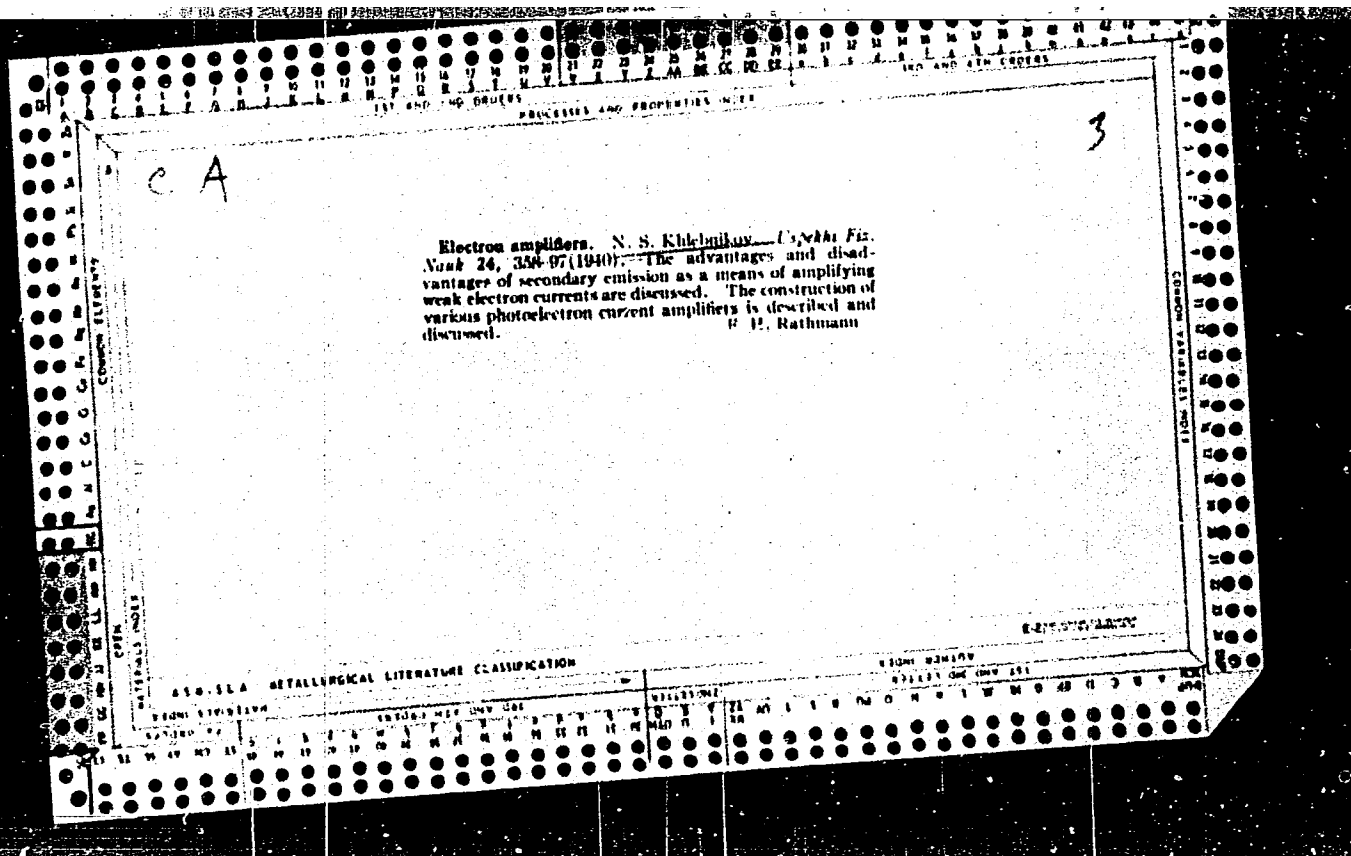
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Phototelegraphy & Television

541 ANTIMONY-CARBUM PHOTOCELLS.—N. S. Khleba-
nikov. (*Izvestiya Elektrom. Lab. Tula*, No. 11,
1948, pp. 65-70.)

A general survey is given of the properties of the Sb-C photocells. Their physical structure is discussed and spectral as well as volt/ampere characteristics are plotted for photocells in which the cathode is deposited a) directly on the glass envelope (Fig. 3a) and b) on a conducting base, usually silver (Fig. 3b). The fatigue of the cells is also considered and curves are plotted (Fig. 6) giving a comparison between this type of cell and the Cs₂O-Ag type. Among other advantages of the Sb-C type over the other is the possibility it provides of obtaining a one-colour reproduction of a multi-coloured image. This is illustrated by Fig. 7, in which one-colour reproductions of multi-coloured strips, as obtained respectively with the two types of cell, are shown.

1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
1ST ORDER													2ND ORDER													3RD ORDER													4TH ORDER												
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<p>PROCESS AND PROPERTIES INDEX</p> <p>Quantum output and spectral sensitivity of various photoelectric cells. N. S. Khizmatov. <i>Dokl. Akad. Nauk</i> 24, 103-4 (1940); <i>Chem. Zvest.</i> 1941, 11, 181; cf. <i>CA</i> 35, 35301. — A summary of recent exper. results obtained with Sh-Co, O-Ag-Co, S-K, Se and S-Th photoelectric cells.</p> <p>M. G. Moore</p>																																																			
<p>ASAC-56 METALLURGICAL LITERATURE CLASSIFICATION</p> <p>1ST ORDER</p> <p>2ND ORDER</p> <p>3RD ORDER</p> <p>4TH ORDER</p>																																																			



1ST AND 2ND ORDERS

PROCESSING AND PROPERTIES INDEX

CA

Complex photocathodes. N. N. Kiselevskiy. *Bull. Acad. Sci. U.R.S.S., Ser. Phys.* 8, 267 (1944). Ca-Cd-Ag photoelements are discussed from the viewpoint of semiconductors, and their action is considered to be photoemission of electrons from the depth of the intermediate structural layers from various energy levels of the semiconductor. G. M. Kosolapoff

3

New photoelements with Sb-Ca cathodes. N. N. Kiselevskiy and A. B. Melamid. *Bull. Acad. Sci. U.R.S.S., Ser. Phys.* 8, 310-12 (1944).--A description of Sb-Ca photocells which are sensitive well into the ultraviolet and employ a very thin glass window for introduction of the activating light beam. G. M. Kosolapoff

ASB-11.2 METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

1ST AND 2ND ORDERS

KHLEBNIKOV, N.S.

NENTVIG, K.; KHLEBNIKOV, N.S., kandidat tekhnicheskikh nauk [translator];
PEREKALIN, M.A., redaktor; SKVORTSOV, I.M., tekhnicheskiy redaktor

[Gas discharging tubes in engineering. Translated from the German]
Gazorazriadnye lampy v tekhnike. Perevod N.S. Khlebnikova. Moskva,
Gos. energ. izd-vo 1945. 90 p. [Microfilm] (MLRA 10:4)
(Electron tubes)

621.383.1 + 535.915.1 183
Complex Photoelectric Cathodes.—N. Khlentsov.
J. Phys., U.S.S.R., 1945, Vol. 9, No. 1, p. 61. 4
new conception of complex cathode emitters, a
which the emission is considered as the external
photoelectric effect of semiconductors possessing
unusually low values of the work function. Abstract
of a paper of the Acad. Sci., U.S.S.R.

621.383.2 5031
New Sb-Cs Photocells.—N. Khlentsov & A.
Melamid. *J. Phys., U.S.S.R.*, 1945, Vol. 9, No. 1,
p. 64. Two new types, one for use down to 1000 Å
and the other a highly sensitive (500 Å/Lm) model
showing no fatigue even at high cathode illumina-
tion (10 l.x). Abstract of a paper of the Acad. Sci.,
U.S.S.R.

SA

337.312.5 : 535.215 : 621.343.2 — 82 1865
 Complex photo-methods. Kuznetsov, N. S. *J. Tech. Phys., USSR*, 16 (No. 7) 743-747 (1946) In Russian. — A critical investigation and discussion of the Beer's photo-cathode theory is presented. A novel conception is suggested, based on the semi-conducting nature of complex cathodes, on the spatial character of the external photo-effect and on the difference of the thermo-electron and the photo-electric work function. De Bow's scheme enters the new general theory as a special case. Sb-Cs and Cs-O-Ag cathodes are selected for detailed analysis, and their energy spectrum, aging and the effect of selected alkali-metal atoms are studied. A bibliography of 47 items is included. A. L.

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ASO-51.6 METALLURGICAL LITERATURE CLASSIFICATION

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KHLEBNIKOV, N. S.

24 3

The chemical composition of the antimony-cesium layer. N. S. Khlebnikov. *J. Tech. Phys. (U.S.S.R.)* 17, 333-340 (1947) (in Russian).—Direct analysis of Sb-Cs photocathode layers by leaching with H_2O , titrating $CsOH$ in the filtrate and detg. Sb in the residue (e.g., colorimetrically with pyridine) gives erroneous results owing to soln. of Sb in H_2O ; Sb condensed from vapor was dissolved in distd. H_2O completely in about 4 hrs. at room temp. To ascertain the compn. of the photosensitive layer, the amt. of Sb introduced into the cell by evapn. from a Ni wire carrier was detd. directly by weighing the wire before and after the evapn. The Sb layer was then treated with Cs vapor supplied by a $CsCl + Ca$ source until max. sensitivity was reached. In the layer thus formed, Cs was detd. by leaching with H_2O and titration. The compn. was found to correspond to $SbCs_2$, with an excess of Cs of about 10 atom % over the stoichiometric ratio. N. Thon

KHLEBNIKOV, N. S.

PA 35/49T97

USSR/Physics
Cathodes, Photoelectric
Luminescence

Dec 48

"The Problem of the Energy Structure of the Antimony-Cesium Cathode," N. S. Khlebnikov, A. Ye. Melamid,
3 pp

"Dok Ak Nauk SSSR" Vol LXIII, No 6

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Studies luminescence of antimony-cesium cathodes. Graphs curves showing layer radiation and photocurrentivity versus wave length of exciting light. Diagram shows energy levels of the antimony-cesium layer. One new result is the experimental determination of the width of the conductivity zone for

35/49T97

USSR/Physics (Contd)

Dec 48

an antimony-cesium layer and the discovery of an exclusion zone existing between the conductivity zone and a level corresponding to an electron ejected in a vacuum with zero energy. Submitted by Acad S. I. Yevilev, 1 Nov 48.

35/49T97

(AEC-tr-1478)

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p>Energy-level structure of the antimony-cesium cathode. V. S. Khlebnikov and A. E. Melamid. <i>Doklady Akad. Nauk S.S.S.R.</i> 63, 649-51(1948).—Sb-Cs films on glass show luminescence in excitation in the same wave-length range which gives rise to elec. photocond. If the two curves are drawn so as to coincide at the max., they become practically identical along their entire course. Both luminescence and photocond. begin at 0.8 μ, pass through a max. around 1.1 μ, and cease at 1.53 μ. Between the long-wave limit of the external photoelec. effect, at about 0.65 μ, and the common short-wave limit of photocond. and luminescence, at 0.8 μ, there is a gap where photo-effects are absent altogether. Intense illumination with short-wave radiation, up to 3025 Å., causes no long-wave luminescence. Photocond. and luminescence are obviously due to excitation of electrons from the filled zone to the cond. zone. The data permit rough construction of the energy-level scheme characteristic of Sb-Cs films; the 3 levels lie, resp., 0.81, 1.54, and 2.03 e.v. above the filled zone. N. Thon</p>																			
<p>ASB-51A METALLURGICAL LITERATURE CLASSIFICATION</p>																			
<p>1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 3100 3200 3300 3400 3500 3600 3700 3800 3900 4000 4100 4200 4300 4400 4500 4600 4700 4800 4900 5000 5100 5200 5300 5400 5500 5600 5700 5800 5900 6000 6100 6200 6300 6400 6500 6600 6700 6800 6900 7000 7100 7200 7300 7400 7500 7600 7700 7800 7900 8000 8100 8200 8300 8400 8500 8600 8700 8800 8900 9000 9100 9200 9300 9400 9500 9600 9700 9800 9900</p>																			

KHLEBNIKOV, N.

USSR/Physics
Cathodes, Photoelectric
Photoelectric Devices

Jan 49

"Review of N. D. Morgulis, N. G. Borzyak and B. I. Dyatlovskaya's Article, 'Optical and Photoelectric Properties of Cesium Antimonate Cathodes,'" N. Khlebnikov, 2 pp

"Zhur Teth Fiz" Vol XIX, No 1

Letter from Khlebnikov takes issue with conclusion drawn in subject article. The conclusion advanced the supposition that the depth of the zone l_0 from which the photoelectrons issue has to be much less than $\frac{4\pi d}{\lambda}$ (where λ is wave length

24/497109

USSR/Physics (Cont'd)

Jan 49

of activating light and n_2 is refractive index of cesium antimonate film) and evaluates it as $l_0 \leq 15 m\mu$.

24/497109

Photoelements (Basic Properties and Applications).
(In Russian.) N. S. Khlebnikov. *Elektrichestvo* (Elec-
tricity), Apr. 1950, p. 56-65.

Basic properties of different types of photoelements
were investigated. Photoelements were compared
with thermal indicators of radiant energy. Methods
and special characteristics of utilization of photo-
elements of different types are indicated. Summary of
the characteristics of photoelements produced in the
USSR is presented in tabular form. 20 ref.

LEYTSEYEN, L.G.; KHLIBNIKOV, N.S.

Feedback in photoelectron multipliers. Zhur.tekh.fiz. 25 no.5:943-944
My '55. (MLRA 8:7)

(Photoelectric multipliers)

KHLEBNIKOV, N.S. [translator]

Semiconductors which are sensitive in the infrared range of the spectrum. R.A.Smith. (From: Advances in Physics, 2, 321, 1953) Usp. fiz. nauk 58 no. 3: 433-486 Mr '56. (MIRA 9:7)
(Semiconductors) (Spectrum, Infrared)

KHLEBNIKOV, N.S.

AUTHORS: Khlebnikov, N.S., and Melamid, A.Ye.

120-6-2/36

TITLE: Photo-electron and Electron Multipliers (A Review)
(Fotoelektronnye i elektronnye umnozhiteli (Obzor)

PERIODICAL: Pribury i Tekhnika Eksperimenta, 1957, No.6,
pp. 6 - 18 (USSR).

ABSTRACT: The review covers the properties and working conditions of multipliers used for measuring weak light sources and short light pulses produced in the USSR. First working photo-electron multipliers were produced by Kubetskiy (Ref.1) in 1933. This tube was introduced without any substantial changes by RCA in 1934-1935. Kubetskiy anticipated most of the other authors, as can be seen from Ref.2. In the forties, it became obvious that photo-electron multipliers can be very useful and convenient in the measurement of very weak light sources, e.g. in spectroscopy and astronomy. A new stage in the development of these multipliers began in 1947 when Kallman (Ref.4) showed that, in conjunction with a phosphor, electron multipliers can be used as detectors of radio-activity. Applications to nuclear physics soon followed. Such multipliers have three important properties, namely, high amplification (up to $10^8 - 10^9$), very small inertia and proportionality between the

Card 1/3

Photo-electron and Electron Multipliers (A Review)

120-6-2/36

input and output signals over a wide range of inputs.

a) Multipliers used in nuclear physics. Table 1 gives complete data for 14 multipliers used in scintillation counters. The photocathode diameters range from 15 to 190 mm and the number of dynodes from 9 to 13. Both focussed and Venetian blind type are produced. Amplification factors range from 5×10^4 to 10^7 ,

and rise times from 10^{-8} to 5×10^{-9} secs.

b) multipliers used for weak light sources. Characteristics of 6 such multipliers are given fully in Table 2. The sensitive areas range from $5 \times 5 \text{ mm}^2$ to $5 \times 16 \text{ mm}^2$. Two multipliers having sensitive elements of diameter 15 mm are also given. Sb-Cs, Cs-O-Ag and Sb-Cs photocathodes are employed. Spectral regions covered lie between 2 000 and 10 000 Å.

c) Electron multipliers. The first practical use of the secondary electron emission multiplier without a photocathode was described by Allen (Ref.13). Such multipliers can be used for counting positive ions in mass-spectrometers. In the Soviet Union analogous work was carried out by Livshits (Ref.16). The present authors have investigated various multiplier systems as well as the following alloys for dynodes: Cu-Be, Cu-Mg,

Card2/3 Cu-Al-Mg, Al-Mg-Si. The latter alloy was finally chosen as the

Photo-electron and Electron Multipliers (A Review).

120-6-2/36

most convenient technologically. It is pointed out that it would be very interesting to compare Soviet multipliers with foreign. Unfortunately, there is almost a total absence of foreign multipliers in the Soviet Union. There are 11 figures, 2 tables and 17 references, 12 of which are Slavic.

SUBMITTED: May 20, 1957.

AVAILABLE: Library of Congress.

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KHLEBNIKOV, N. S.

"New Types of Photo-electron Multipliers"

A conference on Electron and Photo-electron Multipliers; Radiotekhnika i Elektronika, 1957, Vol. II, No. 12, pp. 1552 - 1557 (USSR)

Abst: A conference took place in Moscow during February 28 and March 6, 1957 and was attended by scientists and engineers from Moscow, Leningrad, Kiev and other centres of the Soviet Union. Altogether, 28 papers were read and discussed.

AUTHOR: Khlebnikov, N. S.

48-1-15/20

TITLE: New Photoelectron-Multipliers (Novyye fotoelektronnyye umnozhiteli).

PERIODICAL: Izvestiya AN SSSR Seriya Fizicheskaya, 1953, Vol. 22, Nr 1, pp. 70 - 77 (USSR)

ABSTRACT

The investigation of the properties of the $\Phi\gamma$ -19 which are also described here served as a starting point for the development of new photoelectron-multipliers. The production of photoelectron-multipliers (PV) better corresponding to the requirements of nuclear physics than the $\Phi\gamma$ -19 is needed. The production of a satisfactory spectrometric multiplier, i.e. of a photoelectron-multiplier with a good amplitude-dissolving-power was considered the most important task. The investigations were made with about 100 $\Phi\gamma$ -19 of current production. The results of the investigations were used by the authors as the basis for some modifications at the input of the device. Besides, problems were raised in this connection which referred to a more expedient construction and to a number of processes in the production of device. The call for the pairing of the front-photocathode with the dynode-system was fundamental, namely the selection of a dynode-system which may easily be combined with a front-

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photocathode. Investigations showed that the solution found in this respect is inexpedient in the ϕ Y-19 in the elaboration of quality-PV for scintillation-counters. The necessity of using additional lenses at the input also became evident. The investigation for stability showed that most of the devices are unstable. - It is shown that in the case that the focusing of the flow of electrons from the cathode is sufficiently sharp (for this additional electron-lenses at the input are necessary) all demands made on the device at the input to the spectrometric PV are fulfilled. Taking into account that for the purpose of obtaining PV working more stably, it is necessary to obtain other dynode-materials beside the Sb-Cs-layers, Ye. S. Shpichenetskiy and I. L. Rogel'berg tested some special alloys in the "Gibrotsvetmetobrabotka"-Institute and finally selected an aluminum-magnesium alloy as the most convenient one in the technological respect. The first spectrometric PV was given the laboratory-mark 1 C. The establishment of the input guarantees the spectrometric properties of every PV which also corresponds to the other fundamental properties - quantum yield at the photocathode, uniformity of sensitivity, amplification. The same results ($\sim 100\%$ collection of electrons) were also obtained in all PV of the type 1 B. The multiplier with a higher disolving power with respect to time was given the mark 1 B. A dynode-system

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of a circular type was used here. This system may be well combined with a front-photocathode. The dissolving power with respect to time lies in the domain $(1,5 \div 3) \cdot 10^{-9}$ sec. Type 2G (diameter of the photocathode 150 mm) and 2 M (diameter of the photocathode 27 mm) were directly developed from this group of multipliers. The ~~irreaching~~ tests of types 1 C, 1G, and 1 B showed good results. The further works will follow the following directions: 1) Mastering of the new dynode-system of the circular type with a large number of dynodes, 2) elaboration of a new chronological system of a linear type with ring-shaped dynodes and 3) elaboration of chronological PV with a large photocathode-surface. The following persons actively participated in working out the new types: A. Ye. Melamid, Ye. P. Yurlova, V. I. Bogatyrev, A. M. Potapov, G. E. Levin, Yu. A. Timoshenko, M. F. Adamovich, V. F. Ivanov. There are 10 figures, 3 tables and 2 references, 1 of which is Slavic.

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1. Secondary emission amplifiers-Properties

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SOV/109-4-6-14/27

AUTHORS: Khlebnikov, N.S. and Melamid, A.Ye.

TITLE: Energy and Angular Distributions of the Photo-electrons from Complex Cathodes (O raspredelenii fotoelektronov po energiyam i uglam vyleta dlya slozhnykh katodov)

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 6, pp 1008 - 1017 (USSR)

ABSTRACT: The investigation reported in the article was carried out during 1950 - 1953 and its aim was to obtain the data necessary for the design of an electron-optical system employing complex photo cathodes. The results obtained by the authors and their interpretation differ from those obtained by later investigators (Refs 1-6). The experiments were carried out by employing a "sectionalised" spherical condenser having an external diameter of 100 mm (Figure 1). The experimental tube containing a spherical condenser was in the form illustrated in Figure 2. The experimental results are shown in Figures 3-11. Figure 3 illustrates the maximum energy of the photo-electrons as a function of the quantum energy $h\nu$ for two tubes with spherical cathodes ; Curve 1

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**Energy and Angular Distributions of the Photo-electrons from
Complex Cathodes**

refers to an antimony-caesium cathode, while Curve 2 was taken with an oxygen-silver-caesium cathode. The slope of the curves gives the average value of the Planck constant. Figure 4 shows that, for both the above cathodes, the saturation points in the current curves changed stepwise during the transition from long to short waves. The energy distribution of the photo-electrons in an antimony-caesium cathode, deposited on a platinum-coated glass sphere, is illustrated in Figure 5; the curves were taken for the wavelengths ranging from 6200 - 2537 Å. The angular distribution of the photo-electrons is illustrated in Figures 7, 8 and 9; the curves marked '1' were taken with a forward illumination, while the curves marked '2' were measured with backward illuminations. Figure 11 shows the electron energy distribution of an oxygen-silver-caesium cathode for the wavelengths ranging from 8000 - 2848 Å. The above experimental results are employed to explain the energy structure of the photo cathodes and to interpret the

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process of production and movement of the photo-electrons in the emissive layer. In particular, the experiments show that the angular distribution of the photo-electrons is axially symmetrical and consists of two components: 1) a component having a maximum in the direction normal to the surface and, 2) a component having a maximum at a comparatively large angle. As regards the energy structures of an antimony-caesium cathode, the authors' results indicate that the Burton model (Ref 15) is incorrect. The authors express their gratitude to Ye.P. Kurlova for preparing the experimental equipment. Note from the editor: the above article produced a number of criticisms (from various sources) relating to the method of the measurements and the interpretation of the experimental results. However, in view of the novelty

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of the results obtained, the editorial board decided to
publish the paper. There are 13 figures and
17 references, of which 7 are English and 10 Soviet;
one of the Soviet references is translated from English.

SUBMITTED: January 15, 1958

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[illegible]

S/053/60/071/02/09/011
B006/B017

AUTHOR: Khlebnikov, N. S.

TITLE: Leonid Aleksandrovich Kubetskiy (Deceased)

PERIODICAL: Uspekhi fizicheskikh nauk, 1960, Vol. 71, No. 2, pp. 351-353

TEXT: On September 22, 1959, the well-known scientist Leonid Aleksandrovich Kubetskiy died from a serious disease. He was born at Pushkina (Leningrad oblast') on July 25, 1906. Already during his school and university years he was very interested in technical problems, especially in electricity. From 1923 on he attended the LGU (Leningrad State University) and from 1925 on the Politekhnikheskiy institut (Polytechnic Institute). In 1928 he started issuing own scientific papers on electronics under the supervision of Academician V. P. Mitkevich. In 1929 he began scientific research work on electrovacuum apparatus at the Leningradskiy fiziko-tekhnicheskii institut (Leningrad Institute of Physics and Technology). Some of the apparatus constructed at that time are mentioned. In the following years he constructed photoelectronic multipliers of the type ФЭУ (FEU) which founded his fame and play an

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Alexonid Aleksandrovich Kubetskiy (Deceased)

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B006/B017

important part in experimental physics. These constructions and the development of photoelectronic multipliers in the USA are described. Later, Kubetskiy studied problems of the application of FEU for various measurements as well as general problems of secondary electronic apparatus for which he was awarded the Stalin Prize in 1950. A. A. Chernyshev and Doctor V. K. Zvorykin are mentioned. There are 1 figure and 9 references: 5 Soviet, 1 German, 2 American, and 1 British.

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S/120/61/000/²⁷⁷⁰⁹003/021/041
E032/E314

9,4160

AUTHORS: Khlebnikov, N.S., Melamid, A.Ye. and
Timoshenkov, Yu.A.

TITLE: A Photomultiplier Sensitive Down to 1 300 Å

PERIODICAL: Pribery i tekhnika eksperimenta, 1961, No. 3,
pp. 129 - 131

TEXT: The shortwave limit of a photomultiplier has been extended by the present authors by the use of a "wavelength-shifter", i.e. the short wavelength radiation is converted into a longer wavelength radiation with the aid of a suitable phosphor. It was found that the best results were obtained with the ЖЕС-9 (ZhS-9) glass plate, 0.1 mm thick. Fig. 1 shows the spectral characteristics of the photomultiplier ФЭУ-Р5 (FEU-R5) with different materials used for the entrance window. Curve 1 was obtained with "optical glass No. 23" and the R5 photomultiplier; Curve 2 was obtained with a 1 mm thick, high-quality uviol glass and an ФЭУ-Р3 (FEU-R3) multiplier and curve 3 was obtained with the ZhS-9 glass (0.1 mm thick) attached with Canada balsam to the Card 1/3

A Photomultiplier

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R5 envelope. Curve 3 could not be extended at the time to below 2 030 Å owing to lack of a suitable monochromator. However, there is evidence showing that the sensitivity remains quite appreciable down to 1 500 Å. The present authors' recent measurements, using a vacuum monochromator, have yielded the curve shown in Fig. 2. Fig. 4 shows the light output of the ZhS-9 glass as a function of thickness (mm). There are 4 figures and 1 table.

SUBMITTED: August 2, 1960

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27711
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E073/E533

246800

AUTHORS: Yergakov, V.A., Levin, G. E., Melamid, A.Ye.,
Trebukhovskiy, Yu.V. and Khlebnikov, N.S.

TITLE: Electron multiplier with an axially symmetrical anode
window of 24 cm² area

PERIODICAL: Pribury i tekhnika eksperimenta, 1961, No.3, pp.157-158

TEXT: For recording wide beams of recoil nuclei, electron
multipliers are required with an as large as possible area of the
cathode from which the recorded particles eject electrons. Fig.1
shows a sketch of the electron multiplier. In this paper an
electron multiplier is described, the cathode of which is in the
shape of a hemisphere of 60 mm diameter with a central opening of
10 mm diameter. Along the axis a short 6 mm diameter cylinder is
placed which is electrically connected with the first dynode.
In the gap between the cylinder and the edges of the cathode
opening, a ring, with welded on 0.15 mm diameter tungsten wires
which are located along the generating lines of the 8 mm diameter
cylindrical surface inside the cathode cavity, is fixed onto glass
insulators. A potential slightly higher than the cathode

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Electron multiplier with an axially ... 8/120/61/000/003/027/041
E073/E535

potential is fed to the wire "cylinder" and this produces an additional field that accelerates the electrons which are released from the cathode surface by the primary particles so that the collection of electrons from the peripheral regions of the cathode into the dynode system is considerably improved. To eliminate field distortions in the cathode cavity, the inlet window is covered by a grid to which an independent potential can be fed. Electrons from the cathode, which come into the near-axial region of the cathode with only low energies (due to the accelerating field produced by the wire cylinder), are under the effect of a strong focusing field of the cylinder of the first dynode which collects them onto the active part of its surface. Then follows the ordinary process of multiplication in the dynode system, which has 17 dynodes instead of the usual 11 in the type C (1S) multipliers. The cathode and the dynodes are made of an Al-Hg alloy with an addition of silicon with thicknesses of 0.2 mm and 0.1 to 0.12 mm, respectively. Activation is by alternating heating in vacuum and in an O_2 atmosphere at $t \sim 450^\circ C$ until the required quantity of oxygen (4 to $5 \mu g/cm^2$) is absorbed. An

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important advantage of this alloy against other alloys (Ag-Mg, Cu-Mg, Cu-Al-Mg, Cu-Be) is its reactivation after standing in air (heating in vacuo at 340°C for 30-60 min). The operation of an electron multiplier is as follows: onto each section of the cathode a narrow, 8 mm wide, beam of α -particles is directed and the number of pulses at the output is recorded. Fig.3 shows the focusing curves (N - pulses/sec) taken on displacing the source along the cathode diameter. The half-width of the curve equals 55 mm (which coincides with the diameter of the inlet window) but does not change on changing the efficiency of the recording of the α -particles (curves 1, 2 and 3 were recorded for α -particle recording efficiencies of 100, 45 and 19%, respectively). The best amplitude distribution of the pulses (Fig.4) was obtained for the following operating conditions:

Number of Electrodes	Potential difference, V
Grid-cathode	27 \pm 60
Cathode-wire cylinder	46 \pm 20
Wire cylinder - 1st dynode	380 \pm 100
1st dynode - 2nd dynode	210
17th dynode - collector	210

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The authors also investigated the integral amplitude distribution of the pulses at the output end of the multiplier. Fig.4 shows the integral amplitude distribution of the pulses of the multiplier for α and β particles; the bias on the discriminator (V) is recorded on the abscissa whilst on the ordinate the number of pulses per second are recorded, the amplitude of which is larger than the bias voltage (top curve - α -particles ^{210}Po , bottom curve - γ -particles ^{60}Co). The plateau of the counting in the range of small discriminations is characterized by 100% efficiency of recording the α -particles. The background of the electron multiplier for the 70% range of α -particle recording is 2 pulses/sec and in the range of 50% it does not exceed 1.5 pulses/sec. Ye. P. Yurlova and V. P. Ivanov participated in the design and building of the multiplier. There are 4 figures.

[Abstractor's Note: Complete translation.]

SUBMITTED: June 6, 1960

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